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Blackstone Canal District Alliance (BCDA) and Fairfax Films: Worcester's Role in the American Industrial Revolution

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The Blackstone Canal District: Worcester's Role in the American Industrial Revolution

An Interactive Qualifying Project Submitted to the Faculty of
WORCESTER POLYTECHNIC INSTITUTE
in partial fulfillment of the requirements for the Degree of Bachelor of Science by

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Date: May 2, 2015

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This report represents work of a WPI undergraduate student submitted to the faculty as evidence of a degree requirement. WPI routinely publishes these reports on its web site without editorial or peer review. For more information about the projects program at WPI, see <http://www.wpi.edu/Academics/Projects>.

Executive Summary

Our project is a short documentary focused on the industrial development of city of Worcester. The film argues that the creating of the Blackstone Canal in 1828 both culminated and further stimulated that industrial growth. We are hoping to show this film in places such as the American Antiquarian Society and Worcester Historical Museum, as well as on local television channels, and perhaps in wider venues.

Our initial goal was to learn all we could about Worcester's development in the 19th century, with particular attention to the processes by which the Blackstone Canal came into being. The research began with reading the works of individuals such as Albert Southwick, Kenneth Moynihan and Roy Rosenzweig as well as consultation with local history experts Eugene Zabinsky, William Wallace, JoAnn Mills, Allan Fletcher, Jim Welu, John Giangregorio and Scott Fair, all of whom watched and critiqued every aspect of the film as it evolved over the seven week term. The American Antiquarian Society and the Worcester Historical Museum were indispensable aids to our understanding of the topic as well as unimaginably rich sources of images for this documentary. Since photography was invented well after the Blackstone Canal had come and gone, we had to rely on city documents, business records, personal memoirs or paintings and drawings from the era.

Because only one of us had digital film experience we had to learn a great deal about putting a movie together. The initial task required us to pen a narrative that told the story as best we understood it. Simultaneously we collected as many visual artifacts as we could locate for the time period surrounding the canal. Due to the time period of our focus, finding imagery was our biggest limiting factor. To make a successful film we had to marry the images we had to the narrative through a process called scripting, and marry that to music and sound effects so that the film not only engaged but also entertained the audience. We undertook video interviews to add diversity and cogency to the film, although most of that material did not make the final version of the film.

Our narrative included the main storyline of Worcester starting in the late 1700's with early Worcester as a shire town. We then showed the origins and building of the Blackstone Canal, leading in to its eventual decline with the introduction of railroads in the area. Thereafter Worcester became a remarkable hub of industrial innovation and consequent population growth, spawning several industries that became dominant nationally in fields like wire making, envelope manufacturing, and quality paper production and later in industrial abrasives, and specialized steel manufacture. The film contends that the Blackstone Canal had a significant role in Worcester's industrial expansion and innovation, crediting the canal with making Worcester a transportation hub, which then led to further growth. The film closes by wondering if a contemporary canal recreation might also have an initiating effect on Worcester's new industries of higher education, bio-medical research, and tourism.

Overall, our goal with the film is to better the knowledge of the general public about parts of Worcester and the Blackstone River Valley not only being named a National Park recently, but why the area is deserving of National Park status. We also are trying to show through our film that the potential redevelopment of a section of the canal could once again be beneficial to the city of Worcester.

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Chapter 1: Narrative

“The influence of the canal, even in prospect, upon business, is extensively felt and acknowledged. When the canal shall have gone into actual operation, its effect...will give increased value to, and call into use, the immense water power yet unoccupied in the vicinity, thus adding to our population by giving profitable occupation to thousands, extending and invigorating trade, and securing to the agriculturalist a ready market and a good price for all the surplus products of his land.”

- Massachusetts Spy July 26, 1828

The city of Worcester began as a small town at the headwaters of the Blackstone River. For an extensive period after its formation, Worcester was simply a subsistence farming village, not having much more than an agricultural based economy. Farmers would produce enough goods to survive and sell any surplus they had at the market.

By 1790, Worcester had just over two thousand residents. With Worcester's small population, and the surrounding towns being similar in size, farmers had to bring their goods all the way to Boston or Providence.

The transportation of excess crops to a port city was very expensive, with a cost per ton of \$25 for every hundred miles travelled. In addition to the expense, the trip from Worcester to Providence took upwards of a week. With this long trip, crops would become more susceptible to spoiling before even arriving at the market. As papers from the time noted, it cost less to transport goods from England to Boston than it did from Boston to Worcester.

The length and cost of these trips to the coast made it difficult for the average Worcester citizen to make a continuous profit. However, there was more than just farmland in Worcester. Early signs of industry were already starting to emerge.

By the mid-1700's the village of Worcester could boast several water-powered mills. They were small operations consisting of saw, bark, and woolen mills as well as several blacksmith shops. As early as 1789, a cotton manufactory could be found on a tributary to the

Blackstone River, Mill Brook. Complete with a carding machine, spinning jenny, and two looms, it was a sign of what was to come.

Revolutionary Isaiah Thomas came to Worcester in 1775 to print his newspaper, the Massachusetts Spy for the revolutionary movement. After having trouble securing enough paper to print as much as he pleased, Thomas established his own paper mill in 1796, just one year after Slater's Mill in Pawtucket, Rhode Island. Thomas' mill brought a hint of what Worcester could achieve if Worcester's industrialists, like the farmers, were given access to a faster and cheaper method of transportation.

The idea of a Providence to Worcester canal was first proposed in 1796. Providence native and entrepreneur John Brown wanted a connection to Worcester and the so called heart of the Commonwealth. He felt that a canal would open up industry in the valley, allow further import and export of goods, as well as allow for new markets that were not before possible due to cost. However, Boston did not want the canal made as it would divert trade away to Providence. With this in mind, the Massachusetts General Court ruled against the building of the canal and Brown never got to see his plan come to fruition. Yet, the idea of the canal was an intriguing one.

Years down the road, in 1822, Levi Lincoln and other prominent leaders in the area would meet in order to discuss the idea of a canal once again. Surveys were conducted in order to show the potential increase of imports as well as exports of towns in the area, with many towns projecting a large increase in business. The effort to revive the canal project proved successful, and in 1823, the Blackstone Canal Company was formed.

The Blackstone Canal was surveyed to traverse the steep, hilly area of Worcester all the way to the port city of Providence. The Canal was designed to follow the natural landscape of the Blackstone River utilizing channels that would pass in and out of the waterway. The Canal was to be 32 feet wide, tapering down to 18 feet at the base, with a depth of 3 and a half feet. From Worcester to Providence there was a total elevation drop of over 450 feet along the 45 mile path. A descent this drastic required the use of locks.

Locks are portions along the canal that raise and lower boats during the voyage. These

locks were built with stone and designed with outlets to allow the controlled flow of water either in or out whenever needed. Forty eight locks sat along the length of the canal in total each measuring 82 feet long and 10 feet wide to accommodate for even the largest of the projected canal boats.

Construction of the canal was slow to start. Sections of the canal were awarded to individual contractors, some of which would abandon their section with frustration growing over the project. In 1826, chief engineer Benjamin Wright finally arrived after the completion of the Erie Canal to get the Blackstone Canal back on track. He brought with him some respected contractors from his past work. It was one of these men, Tobias Boland, that led the Worcester end of the project. Boland knew that unskilled workers would be a problem with building a canal to this extent, and being an Irishman himself, he brought 20 skilled Irish workers to help dig the canal at the Worcester end. These Irish workers would not be such a small group for long, as eventually 500 skilled Irish workers would arrive to help with the job.

The locals did not like these Irish workers, and many had contracts stating that they would not be allowed to live in the city limits during the extent of their work. Thus, the Irish workers were forced to form a shantytown. This was located near modern day lower Shrewsbury Street and the surrounding area. A citizen of Worcester described the shanty town by saying “more miserable hovels I never saw... The sides of the house had sods upon them, yet it is said that they are better off here than in Ireland, because here they can get food.”

As the canal neared completion, the enthusiasm grew. Farmers planted additional acres of crops in anticipation of the opening. On October 7th, 1828, the packet boat *Lady Carrington* arrived in Worcester by way of Providence, indicating the day had finally come. “Her arrival was announced by the firing of cannon and the ringing of bells” in a town longing to see what prosperity the canal would bring. The first canal boats containing freight started their voyages soon after and by 1829, there were around 75 boats arriving in Worcester per month. In the following years, Worcester continuously brought in an excess of goods amounting to four thousand tons, while also managing to export over eight hundred of the same. In total, the county exported 25,000 tons of goods during its first year of operation alone. While farmers and merchants needed to pay tolls to pass through the locks, the canal still saved them upwards of

three dollars per ton, a considerable amount for the time period.

To move the boats along the canal, beasts of burden, typically being horses, would be tethered to the boats in pairs. The horses would pull the canal boats from tow paths which were located directly next to the canal. It was necessary for a boy to watch or ride the horses, in order to guide them down the paths properly. The use of water in the towing process greatly reduced the fatigue and power needed to tow any crops or goods.

Due largely to the completion of the Blackstone Canal, Worcester's industry flourished. Many wanted a piece of the profitability brought by the canal and by 1830, Worcester's population had jumped to over four thousand, a 62% increase over the previous two decades.

Despite the increase in population as well as prosperity, several issues started to come to light. Since the canal cut in and out of the Blackstone River instead of using its own channel the entire time, any issues with the river became issues with the canal, the most common of these being drought and the freezing of sections of the river. With harsh New England weather causing the canal to be inoperable for months at a time, profits were greatly reduced.

More problems arose as the number of mills along the river increased. By using parts of the Blackstone River itself, the Canal operators would inadvertently cut off power to the mills when filling the locks. The reduction or elimination of water power angered many of the mill owners, who in response would dam the canal with large rocks. Ultimately, the mill owners sued the Blackstone Canal Company in 1833 over the use of the Blackstone River. The mill owners won, giving another blow to the canal's future. However, these issues were not the final cause of the Canal's demise.

Due to the number of technical problems with the canal, a blossoming and more consistent technology was needed to facilitate transportation: the railroad. A line from Worcester to Boston was completed in 1834. This had numerous advantages over the canal. It was faster, easier to maintain, and required less manpower. The railroad could also be operational in New England weather for a full 12 months of the year, unlike the canal, while still remaining lower in cost. Although the canal would remain operational for another 14 years, the completion of the rail line would signal the beginning of the end. A rail line to Providence running parallel to the canal gave the final blow. Just a year after the rail line's completion in 1847, the Blackstone

Canal collected its last toll. Despite the numerous setbacks of the canal, it played a critical role in the eventual development of Worcester. The canal made Worcester a hub for transportation, and this only grew stronger with the introduction of railways. Industry in Worcester would continue to grow. If the canal was the spark that moved Worcester toward manufacturing, the railroad was the fuel that greatly grew Worcester's sphere of influence.

The developing town started to attract many new faces. The canal and rail lines brought a flood of new immigrants to Worcester. Along with the Irish, many French Canadian and Swedish immigrants started to arrive to the flourishing city. Years later, scores of Lithuanian, Polish, and Italian newcomers would come as well. Each of these groups would form their own community, working together to help provide support within their respective neighborhoods.

Before this immense growth, Worcester was only comparable in size to its neighboring towns. The increased business opportunities and immigration caused a population boom, quickly having a profound effect on the shire town of Worcester. Shortly after the opening of the canal in 1830 there were just over 4,000 residents in Worcester. After 20 years, the canal and railroads were responsible for drastic growth leading to a population of over 17,000 as early as 1850. This immense development caused a realization for change and on February 29, 1848 Worcester was officially chartered as a city. The same population boom that caused Worcester to become a city also caused a tremendous amount of new businesses to be formed, some of which would become very notable.

The Washburn and Moen Shops are among the most notable. Started in 1831, the Washburn and Moen Shops were founded by Ichabod Washburn, and became a powerhouse by the mid 1800's. By the late 1870's Washburn and Moen was not only the largest producer of wire products in the United States, but the world. In modern times, wire may seem to be a commodity, but at this time period wire was crucial for development. Wire was used for laying telegraphs, trains and train cars, and even home goods, such as corsets. Washburn and Moen was also well known for its innovation in strengthening wire as well as creating and producing barbed wire more effectively, making wire Worcester's largest industry. The site of the Washburn and Moen factory is well known for being in part on the site of Isaiah Thomas' paper mill.

Along with wire, envelopes and shoes were the other main industries in Worcester. The development of an envelope folding machine by Dr. Russell Hawes allowed for Worcester to become a leader in producing envelopes. The machine eliminated the folding of envelopes by hand, greatly speeding up production. The Hill Envelope Company inherited the folding machine and produced envelopes at an extraordinary rate for years.

In terms of shoes, there were two notable manufacturers in the city at this time: The Heywood Boot and Shoe Company and J.H. and G.M. Walker Company. The Walker brothers used pegged shoe design that their grandfather invented, which made it easier to attach the tops of shoes to the soles while Walker boots were more popular in the west.

Another well-known businessman was George Crompton, who was responsible for the building of the Crompton Loom Works. Crompton had refined his father's patent on a process to improve loom machine efficiency and quickly prospered, expanding his holdings at mills located throughout the city. He achieved worldwide recognition with his loom improvements as early as 1867, winning a silver medal at the Paris Exhibition.

Many major companies were known for their industrial power. Yet another notable company was the Royal Worcester Corset Company. More notable than the corsets, however, was how the corsets were being produced. Female workers headed the production lines, and were paid and treated unusually well for the day. The company also had a nurse in the building, which was extremely rare at the time. Worker medical care was almost non-existent in most factories. An injury in the workplace often led to the loss of a job with laid off workers being left to deal with injuries on their own. This was not the case at the Royal Worcester Corset Company and shortly after the turn of the 20th century, the Company would be the largest employer of women in the country, setting a standard for conditions in the workplace.

Worcester's industrial creativity was not limited to the large companies that controlled the majority of production in the city. The city also proved to be a place where entrepreneurs were encouraged to start something greater than themselves. Two notable capital investors of Worcester were William T. Merrifield and Stephen Salisbury II. They owned refurbished factory buildings which were rented out to entrepreneurs looking to create small startup

companies. The Court Mills and the Merrifield buildings provided Worcester's small businesses with early support.

This innovative and entrepreneurial spirit would help contribute to Worcester's technological innovation. Small businesses could flourish, helping to nurture new ideas in large numbers. From this great amount of industry and innovation, Worcester produced several notable inventions: the monkey wrench, and the first practical type writer. Worcester was even the birthplace of some inventions lost in translation. These include the rickshaw which is typically associated with Eastern Asia, as well as the first bicycle produced in the United States.

The most groundbreaking item to come out of Worcester was the monkey wrench, being especially innovative and useful when working on machines. Invented by the Coes brothers and produced by their wrench company, the convenient one-handed monkey wrench replaced more cumbersome two-handed wrenches commonly used at the time. Instead of searching for a specific tool, a factory repairman could simply carry this new wrench. The monkey wrench could be adjusted to the size of the bolt or part when the repairman arrived. The use of the monkey wrench led to greater productivity stemming from quicker repairs.

The vibrant industrial and social history of America is told here throughout the landscape of the Blackstone Valley. In December 2014 Congress passed legislation creating a new national park in the Blackstone Valley, the Blackstone River Valley National Historical Park.

(Chuck Arning Interview)

The face of Worcester has changed dramatically over the course of history and that trend continues today. The once shire town turned industrial power has recently been having another change of heart becoming a college town excelling in medical research. The Blackstone Canal sparked prosperity and culture once before, who is to say the same could not happen again today?

Chapter 2: Acknowledgments

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Prof. John Zeugner

Music as performed by:

Yi-heng Yang
Soni Mind

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American Antiquarian Society
Worcester Art Museum
Worcester Historical Museum

Chapter 3: Final Film

YouTube link:

<https://www.youtube.com/watch?v=JPm2GyVRUa0>

DVD Attached:

Chapter 4: ID2050 Proposal

Executive Summary

Worcester was once the foundation of an entire era in America; the Industrial Revolution. The knowledge of just how impactful the city of Worcester was on things such as supply chains, innovation and inventions, and industrial ingenuity has been slowly dwindling over time, to the point that now it is truly something of the past. Our goal in making a promotional documentary was to show the world that rich history. We wanted to enlighten the people not only why the National Heritage Corridor is making the Canal District of Worcester and the Blackstone Canal Valley itself a National Park, but also why the Canal and its surroundings deserve to represent American industrialization.

The background portion of our project is designed to give relevant information as to how we can obtain our goals and objectives. This section is heavily influenced by research into Worcester's past, with a focus on the era between the 1820s and 1850s. The background gives a detailed account of important moments through the history of Worcester in an effort to educate readers and ourselves on where the basis of our project comes from. This section also includes which sources provided different pieces of information, giving the project more credibility. The information provided in this section was used to form the rest of the project, from an outline to the storyboard and then to the actual film.

The methodology section of our team's research helps portray the direction in which we plan to take our documentary film. This section's purpose was to give an overview of the main topics that will be touched upon over the course of the film. Goals and objectives for the project were again mentioned in this section in order to re-emphasize the potential significance of what our film could help bring to the city of Worcester. The methodology was written to give our

audience as well as our group a clear picture of what problems the team has to face in order to successfully develop a film that best describes the Worcester Canal District. The methodology section of our research was developed to give our team direction for the storyboarding, scripting, and filming portions of the project.

Chapter 1: Introduction

For years, Worcester was to center of a global industrialization. People flocked to the streets of Worcester in pursuit of the American dream and the jobs that were offered. For a long time this industrial focal point was what Worcester was known as. Worcester was a major contributor to an entire era; the Industrial Revolution. As of late, however, that great history of an industrial power has been dispersed. Many of the landmarks from the industrial age are now merely abandoned buildings on street corners. That idea of a productive, globally active city has been replaced with abandoned buildings and a lack of identity. Our goal is to show what Worcester once was and why the city should be celebrated.

There is a strong push to make one of the most historic aspects of the city, the Blackstone canal district, into a National Park. This idea is being overshadowed however by the fact that no one, not even citizens of Worcester, fully understand what the canal district is. That is where this project team, as well as the Blackstone Canal District Alliance, comes in.

Our main goal is to film and produce a short documentary on just how important Worcester has always been to this day. We want to show not just the Worcester community, but the world how big of a deal the city is. Our focus is on the fact that there is no focus on the history of Worcester. We started from the beginning when all there was in the county was a bunch of farmers and ended with how the city is currently transitioning into a brand new identity.

We plan to use our documentary to better the knowledge of the general public in the area, but also for promotional purposes. The National Heritage Corridor, as stated earlier, is looking to turn the canal district into a National Park. We are trying to show why the Blackstone River Valley and the Canal District surrounding should be a monument of this country.

Chapter 2: Background

Worcester's history is rich with invention, innovation, and manufacturing might. The shift from an agricultural society to the manufacturing powerhouse of the Industrial Revolution began before Worcester's city charter was in place, with the introduction of canals and railroads. As the years progressed and industry became more common across the country, Worcester's role diminished. Along with other factors such as de-industrialization after World War II and suburbanization, much of the city's importance has been forgotten. A thorough look at the industrial development of Worcester, with a specific focus on the Blackstone Canal area, may indicate ways in which the city can recapture its old glory in the 21st Century.

Worcester started out as a sustenance farming town. The townsfolk were almost exclusively farmers, with one street containing most of the other professions – lawyers and merchants were two main ones. These men were known as men of the center (Moynihan 2007). The group included Levi Lincoln, a prominent lawyer and future city mayor, and Stephen Salisbury, an early entrepreneur. While these men were promoting manufacturing as soon as the American Revolution ended, little was done until decades later. Moynihan points out that the lack of progress was due to the hostility from the farmers toward social and economic change. Worcester was a town that had livestock roaming the streets, causing it to “smell of husbandry”, not a town ready to open factories and warehouses on every street (Moynihan 2007).

The first whisperings of a canal began in 1796 with the local Federalists pushing for a connection to Boston. Seven years prior, the first cotton manufactory was placed on the only waterway Worcester had, Mill Brook (Moynihan 2007). The lawyers and merchants of the Federalist Party wanted to continue this trend of manufacturing growth with a connection to

Massachusetts' largest city. However, Boston struck the deal down as they wanted a canal connected to the Connecticut River instead. Another chance to bring heavy industry to Worcester was wasted after an embargo was placed on foreign commerce in 1807. Moynihan argues that this stagnation period was caused by the partisanship in Worcester, with the farmer-oriented Republican Party trying to keep agriculture the focal point. This period was brought to an end with the War of 1812. After the war, both parties went through reform, with "men of commerce" joining the predominantly farmer Republicans. One such man was Levi Lincoln. Placed in charge of the new Worcester County Agricultural Society in 1819, Lincoln pushed for progress. Like him, many other men of the center were a part of this society, and they eventually overpowered the farmers. The Society pushed for changes to improve agricultural practice so that the sustenance farmer would become a commercial one, making surplus for money instead of just enough to get by.

With the men of the center firmly in control of Worcester's future, progress began toward the Blackstone Canal. Vincent E. Powers claims that it is the construction of the canal that would transform a "remote and unimportant village" into a regional commercial center (Mooney 1972). The Blackstone Canal Company was formed in 1823, with the canal planned to run from Worcester to Providence and Narragansett Bay. Construction began in 1825 but was slow due to a small workforce. On July 4, 1826, the Blackstone Canal Company hired Irish workers returning from the just finished Erie Canal. Soon, 80% of the workforce on the Blackstone Canal was Irish (Moynihan 2007). The effects of the canal were immediate and seen well before its completion. Land value next to the canal sharply increased as commercial offices, inns, storage facilities, and other structures were built to accommodate the workers and companies. On October 8, 1828, the packet boat *Lady Carrington* went down the canal signaling its completion.

In the years that followed, Worcester's growth exploded. Between 1790 and 1810, the population went from 2,095 to 2,577, a 23% increase. The population then increased to 4,172 by 1830, a 62% increase (Moynihan 2007). In the year 1834, 5,336 tons of goods had been shipped into Worcester by way of the canal while 826 tons were shipped out. Despite this success, the Blackstone Canal had several weaknesses. The canal at times would follow its own man-made channels, but at other times follow the Blackstone River. When following the river, the flow of water could not be controlled by the canal operators. This situation meant that if the flow of the river was altered, by heavy rain or freezing cold for example, nothing could be done about the setback incurred. Additionally, the canal had to compete for water with the new mills that were appearing along the river. Mill owners would sometimes block sections of the canal in an act of protest (Moynihan 2007). The New England weather would also freeze sections of the river, making travel down the Blackstone Canal impossible. These factors alone were not enough to shut down the canal. The introduction of the Worcester railroad lines, including one running parallel to the canal, signaled the canal's death in 1848.

While the railroad may have been the end of the Blackstone Canal, it shot Worcester into a new era of industrial prosperity. If the canal was the spark that moved Worcester toward manufacturing, the railroad system was the fuel that grew Worcester's sphere of influence greatly. The first railroad built was the Worcester-Boston line. The 44 miles of track would give Worcester access to new raw materials and markets, expanding the city's industry. The track raised \$1,000,000 by selling ten thousand shares. Worcester citizens only bought 250 shares, with 50 being bought by Stephen Salisbury alone. The rest were bought by Boston, New York, and towns lining the proposed route (Southwick 1985). Worcester wanted the railroad so bad that, when the line ended 1 mile away from the center of town, citizens donated land so that the

track could pass through the downtown area. The railroad opened in 1834 to immediate success, with 1,500 passengers riding the line the first day. The line brought it \$48,000 the first year, with 17 thousand tons of freight making its way between Worcester and Boston (Southwick 1985). Lines to Springfield, Norwich, and Providence soon followed in 1839, 40, and 47 respectively. With the Worcester-Providence line running next to the Blackstone Canal, the Blackstone Canal Company decided to sell their portion of the canal to the railroad for \$22,500 (Southwick 1998). With the railroad system now in place, Worcester's population eclipsed 17,000 by 1850. Southwick declares that the railroad lines made Worcester the crossroads of New England (Southwick 1985). With its newfound manufacturing power gathered from the Blackstone Canal and railroad lines, Worcester became the center of American industry. The entrepreneurs in Worcester seized the opportunity to make progress through invention and innovation for years to come.

All throughout history, man has been able to achieve their wildest dreams with the use of their minds. Thinkers and inventors have always been some of the most influential people in the development of societies. The ability to design tools that can be used perform tasks at a better efficiency or perform a task incapable by humans was a major force for mankind to advance out of the Stone Age mentalities of our history. The Industrial Revolution in particular was arguably the largest turning point for America which resulted in a boom of inventions and industrialization.

The surge for Industrialization traveled through every city and town in the New England area. Factories began springing up along major rivers utilizing the raw power of nature's waters to drive man-made mechanical devices. The times were changing rapidly; the days of working the land for the bare necessities had shifted towards this industrial/wages based lifestyle. These

opportunities for steady incomes started pulling people off the farms and into these rapidly developing cities. At the heart of innovation and industrialization was the city of Worcester Massachusetts.

Worcester has a rich history involving the industrialization of manufacturing which was fueled by the creativity of inventors and entrepreneurs. Worcester quickly evolved into being the 2nd largest city in New England after being primarily a farming town. The city as a whole housed many inventors and mechanics that would shape the world through their innovations and methods. The city was home to innovations such as barb-wire, wrenches, and corsets which were produced like nowhere else in the world.

An influential power-player and entrepreneur for the city of Worcester was Ichabod Washburn. Washburn is the man that put Worcester on the map for his manufacturing of wire. Wire was swiftly becoming a necessity in the world. Washburn patented an improved technique for the annealing process for wire making that made the wire stronger and cheaper. (Washburn 150) For many years Washburn mostly produced card-wire which was used for many things especially putting together books. (Washburn 148) Washburn was a versatile man who was able to repurpose his factories to accommodate the changes in the world around him. The two notable instances where Washburn capitalized on the needs of the newly developing world were with barb-wire and telegraph-wire. (Washburn 156)

Another notable company of Worcester was the Coes Wrench Company. This was a smaller company compared to the Washburn & Moen Company. The Coes brothers were handy carpenters who saw a need for change in the wrenches they worked with for years. In 1885 the brothers challenged the world's pre-existing wrench styles with their own. Up until their wrench patent, the English and Springfield wrenches were the only ones on the market and both required

the use of two hands to adjust. (Washburn 137) The Coes “monkey wrench” was a testament to the innovative heart of Worcester by developing a mechanism that only requires the use of one hand to adjust their wrenches.

The mechanically driven factories were not limited to producing raw products. The Royal Corset Company of Worcester was able to utilize the automation of machines to produce their corsets. This company was a huge employer for Worcester, employing eighteen hundred men and women. (Washburn 259) The Royal Corset Company became the largest corset plant in the world branching out of Worcester with salerooms in Chicago and offices in New York.

Worcester continued to be an industrial giant until a sharp decline began during the 1950’s. During the period of the two World Wars, Worcester was needed to produce goods for the war effort, and companies like Washburn and Moen were essential. However, after the end of the wars, Worcester was no longer needed for production, and the decline began. To put specific numbers on Worcester, in 1900, Worcester was among the 30 largest cities in the United States. By 2000, Worcester was not among the largest 100 cities in the United States. This decline was due to a number of technological and economic factors.

The decline of Worcester began after World War II. Before the wars, Worcester was the world leader in the production of wire, and was a major player in several other areas of industry, and continued to be throughout the periods of war. However, after the world wars, Worcester was no longer needed for such production. Production of goods began to be moved elsewhere, to places that provided cheaper manufacturing. During this time, Worcester would lose many of its historical industries, with others being saved from their death only by buyouts by foreign companies. What remained of the famous Washburn and Moen wire company would close during this time (Anderson).

Worcester took another major blow in the 1960's. The construction of interstate 290 split the city in half. This interstate still divides the city today. The building of interstate 290 was both a boon and a hindrance for the city. It did encourage travel, and by splitting Worcester made visiting or traveling to Worcester very easy. Yet, it tore through many neighborhoods, and sped the process of the emigration of those living in those communities from the city. As well as its effects within the city, interstate 290 also connected many other major highways. These connections furthered Worcester's well-known position as a geographic center in Massachusetts, and indeed New England (Anderson).

This project has a close relationship with the history of Worcester, but it should be pointed out that this trend was not unique to Worcester alone. There was a general decline in cities during this time period. Boston was also struck with a population decline, as were other major cities nationwide such as Chicago. This decline could in part be due to the growing suburbs. With the popularization of cars after the Second World War and the consequent vast expansion of the federal highway system, it became possible to live and work in very different places. Thus, cities, like Worcester, lost a large part of their population to those who would rather not live in the city and would rather travel daily to the city instead. The new concept of commuting was further promoted by factors stemming from World War II, when Americans were encouraged to save instead of spend during the war. Thus, when the war ended, many people suddenly had the money to afford new commodities. For many, their saved money during the hard 4 years of war meant leaving the old three-decker buildings for living in the suburbs, which grew by approximately 30% to 100% (Anderson).

A more modern factor is immigration. Worcester is still a home to a variety of immigrants, but these immigrants are from a vastly different part of the world than those

immigrants of 100 years past. The Polish, Italian, and Swedish immigrants slowed (Southwick 1998), and Southeast Asian and Latino immigrants are the major groups of newcomers to the city. Vietnamese and Puerto Rican immigrants became two of the largest immigrant groups in Worcester today (*United States Census* 2014).

The dying city was not unaware of its condition, however. Many attempts were made to reduce the decline. A new entirely enclosed downtown shopping center was opened in 1971, the Centrum was opened in 1982, and Union Station and Mechanics Hall both received facelifts. The effects that these had were certainly not immediate, with city population falling steadily during the 60's, 70's, and 80's (Anderson).

These efforts to save the city were not all in vain. Lately, Worcester has begun to grow, and the medical sector has especially bloomed in Worcester. This sector is also the largest employer in the city, with 3 of the top 5 employers in the city in the medical field. As of the latest major census in 2010, Worcester is again a growing city, with a growth rate of 4.9%. Although this may pale next to historic growth rates that would long stay above 40%, it does show promise for the city (*United States Census* 2014).

Worcester, in its current state, is still trying to stabilize an identity. For years there was a heavy decline and the city is showing the signs with abandoned buildings on every street corner. The history of the city is still clearly visible while not being felt, and because of the lack of sentiment, the local history is not celebrated or even acknowledged. Officials in the city as well as the Blackstone Canal District Alliance and Blackstone National Heritage Corridor are working with the National Park service to try to bring some of the long history back.

The Heritage Corridor especially is pushing to build a community in Worcester around the vast history, specifically the Blackstone River Valley and the district surrounding it. The plan is

to build a National park on the river valley, securing open waters for public use as well as a 48 mile bike path along the same river. An interactive trail is being developed, stretching around the valley and connecting some of the focal points of Worcester's history. Rather than trying to show a chronological timeline of the history and growth of Worcester, the National Corridor and Canal District Alliance are working to show the entire history through a single cultural experience laid out over space.

In the process of turning one of the city's most historic areas into a cultural focal point and national landmark, Worcester is also changing in whom the focus within the city is on. Worcester used to thrive on the lives of immigrants and the work they would perform in pursuit of the American Dream; however searching for said dream in Worcester is no longer true. Now much of the focus within the city is on students and a different, more modern American Dream.

Worcester has been a major contributor to education, especially from universities, for a long time. Because of the different variety of citizens, the focus in terms of housing and jobs in the area has shifted more toward students instead of immigrants. This turn even includes buildings in Worcester and its surroundings. Many universities have turned to old, abandoned buildings for infrastructure. Some examples of infrastructure being used to benefit students include Worcester Polytechnic Institute using an abandoned building for their entire Gateway Laboratories, the brand new Royal apartment complex, as well as some of the UMass Medical campus. Also, the new branch of the Massachusetts College of Pharmacy has extensively repurposed a number of central buildings in downtown Worcester. This strategy also includes some schools funding apartments for student housing in and around abandoned buildings with new renovations to old buildings occurring each and every day.

For years, Worcester has been struggling to find its identity after falling from its former

industrial standing. The process has caused crime rates to rise and the economy to fall, however there is finally a goal and endgame in sight. Many officials within the city are showing high hopes and praise towards these new ideals within the city and there has already been a positive turn and response to both the idea of a National Park as well as Worcester becoming a definitive college town (Schneider, 2015). Worcester, although for different reasons, is finally becoming a focal point in New England, similar in importance of the city in past years.

Whether the citizens of the city realize it or not, Worcester is getting a lot of national attention fairly quickly. In completing this project, we see ourselves as the first step to recreating the vivid history of Worcester as not only what was accomplished within the city in the past, but also how the city continues to grow each and every day.

Chapter 3: Methodology

The goal of our project was to evoke Worcester's critical role in the American Industrial Revolution through film as a way of highlighting the importance of the Blackstone Canal District. In order to achieve this goal, we developed the following objectives:

1. Identify key moments in Worcester's history related to the development of industry and the manufacturing arts.
2. Produce a film raising awareness on the importance found in Worcester's history, for use in the restoration of the Blackstone Canal District to its past heights.

In this chapter, we explain the methodology used to convert our information into a storyboard, and our storyboard into a film.

Objective 2

Produce a film raising awareness on the importance found in Worcester's history, for use in the restoration of the Blackstone Canal District to its past heights.

Our goal called for us to produce a film. We felt that the data was portrayed best through visual media. Before making the film, we had to create a storyboard. A storyboard is the first step to creating and producing most types of film. Many films are visually hard to produce without a plan before hand. The storyboard offers an exact, however not too detailed, plan before the actual filming process begins.

The main point behind a storyboard is to be a planning process for any film, as a sort of visual outline. The idea of a film itself is daunting and can be hard to come across, however a

storyboard, essentially being a rough draft, helps ease the process of creating a film. A storyboard shows the important parts of a film without having to make the film itself. The storyboard consists of main idea visually as well as the camera angles and effects that the producer wants to use in the film. Without the storyboard, many films would not be able to be started in production, let alone be completed into films.

In order to create a storyboard an idea must first occur. A storyboard is still considered difficult to create because it is not easily made from scratch. A storyboard is created similarly to the techniques of making a comic strip. The basics of a storyboard consist of multiple squares with sketches in them. The only aspects truly needed for a storyboard are camera angles and ideas of what to film. A storyboard can not consist of film itself however it is very common for major scenes or ideals within the film to be shown within a storyboard.

To make our storyboard, we broke the potential film down first. This consisted of a very brief, initial outline in the form of bullet points on major topics we wanted to include in the film. From there we greatly expanded on each of these topics, turning the brief outline into a very in-depth guide in writing. The written form of the guide then made creating the storyboard itself leagues easier, having all of the ideas already planned out on paper and just needing to make them visual. The script for the film was the last thing taken into account, not being produced until after the majority of the storyboard was complete. The expanded outline of and the storyboard can be seen in Appendices C and D respectively.

Appendix A. - Liaison Information

Blackstone Canal District Alliance

John Giangregorio
President

Alison Alaimo
Vice-President

Sue Moynagh
Secretary

Eugene Zabinski
Treasurer

The Blackstone Canal District Alliance is an organization dedicated to the promotion of the canal district in Worcester, Massachusetts. They are currently trying to reopen the Blackstone River Canal, in order to promote business, jobs, and income for Worcester. The Alliance's president is Worcester native John Giangregorio, who also sits on the board of Preservation Worcester and serves as a representative for the Canal District on the Mayor's Small Business Roundtable. Mr. Giangregorio is also the owner of Three G's Sports Bar in Worcester.

Fairfax Films

Scott Fair

CEO, Fairfax Films

Fairfax Films is a small film production company producing documentary films on the history of Central New England. They have been aiding the Blackstone Canal District Alliance in promoting the reopening of the Blackstone Canal in order to stimulate economic growth in Worcester, Massachusetts. Fairfax Films has also been promoting history and culture in

Worcester for over 3 years. Fairfax Films' CEO, Scott Fair, is a filmmaker originally from California.

Appendix B. - List of Interview Questions

About canal:

- What was Worcester like before the canal was built?
- How did the building of the canal impact the city of Worcester?
- What role did the city have during the Industrial Revolution?
- What would you say is the biggest misconception about the Canal and the canal district?
- What would you say caused the canal district to become what it is today?
- What was the greatest achievement or innovation that came out of the canal district?
- How did Worcester's contribution to the Industrial Revolution impact the rest of the world?

About National Park:

- What is the structure of the park going to be?
- What is the goal in turning the canal district into a National Park?
- Where exactly will the park be?
- What will the park give to the Worcester community?

Appendix C. - Expanded Outline

(Brief interviews potentially included in each section)

Start with brief introduction to project and brief goal (~1-2 min)

- “Hey excuse me, question”
 - Various locations
 - Live POV shot
 - Random people
 - No background audio
 - Ask major question to random people
 - Either at WPI or in Worcester in general
 - Cut to some answers we liked most

Introduce ourselves and expanded goal/objectives of project(~1-2 min)

- Statement of Goals and objectives
 - Live film of someone speaking?
 - In some major Worcester location
 - No background audio
 - Evoke Worcester’s critical role in the American Industrial Revolution
 - Attempt to raise awareness of the benefits from the restoration of the Blackstone Canal as well as Worcester’s unique history

Tie-in to history (~1 min)

- Time lapse of important aspects in Canal District
 - Potential locations (* = definitely want included):
 - Mechanics Hall*
 - Washburn and Moen Company (Northworks)*
 - “Aud”*
 - Main Street
 - The Broadway
 - Worcester Canal District
 - City Hall
 - Worcester Yacht Club
 - Institute Pond
 - Union Station*
 - http://www.preservationworchester.org/pages/documents/BytheCanalTour_PrintVersion.pdf
 - ~30 sec
 - Background audio: Ken Burns style

- Introducing past
 - ~30 sec
 - Water St./ Canal
 - Street level shot (potentially drop camera to canal level)

Early years: Pre-canal, Canal, and Railroads - Meadows to Monkey Wrenches (~5-7 min)

- Start with brief history of prior to canal (~1-2 min)
 - Audio: rural
 - Farming town
 - sustenance
 - slow pan of worcester farm (picture)
 - Key players
 - men of center
 - slow zoom on picture of Levi Lincoln and Stephen Salisbury
 - Mill Brook
 - level camera angle of current Mill Brook
- Expand into how canal was built (~2-3 min)
 - Audio: industrial/bustling
 - Early construction - years, rocky start
 - slow zoom on picture of canal under construction
 - Irish Influence
 - pan across picture of irish workers
 - Completion of canal - dates
 - slow zoom on picture of *Lady Carrington*
 - What canal changed in city
 - building of structures along canal
 - population growth specifics (numbers)
- Transition from canal to Railroad (~2-3 min)
 - Issues with the Canal
 - audio: water themed
 - channels
 - slow zoom on older picture of canal
 - weather
 - slow pan on extreme weather conditions
 - mill owners
 - slow pan on blockage in canal
 - Introduction of railroad lines
 - audio: railroad station
 - Worcester-Boston line
 - cost, length, years
 - slow pan on tracks
 - Other lines - “crossroads of New England”, “port of Worcester”
 - years

- slow pan on map of Worcester railroads
- Impact
 - revenue, population

Expand greatly on what canal did and broader history of Worcester (~15-20 min)

- Worcester in the Industrial revolution
- The new age Industry brought people off the farm and into the city
 - Factories provided people with a wage-based way of living
 - People no longer worked solely to survive. The wage-based system brought about leisurely based living.
 - Huge population spike
 - Big minority arrivals
 - Talk about or show all Worcester inventions
 - <http://www.golocalworcester.com/lifestyle/8-great-inventions-that-come-from-worcester1>
 - <http://www.worcestermass.com/firsts.shtml>
 - [http://en.wikipedia.org/wiki/Worcester, Massachusetts Firsts](http://en.wikipedia.org/wiki/Worcester,_Massachusetts_Firsts)
 - Explain major inventions
 - Potential list of inventions:
 - Rickshaw
 - Monkey Wrench
 - Washburn and Moen
 - etc.
 - Transition into how this still contributed into future years
 - Companies that survived
 - Norton Company
 - New industries that thrived
 - Services
 - Medicine
 - Electronics

Touch on post-war state of city (~6-7 min)

- World War II
 - Support needed for war vs. after war
 - Peak in 1950
 - Heavy industry no longer needed - population decline
- Growth of suburbs
 - Introduction of cars
 - Everyday people could commute
 - No longer had to live in city to work there - suburbs
 - People could commute to city
 - Did not need to live in city
- Tornado of 1953 (VERY briefly)

- Construction of I-290
 - Split older communities - moved away
 - Split the city physically
 - Connected the city to other highways
 - Ensured Worcester's position as "Heart of the Commonwealth"
- Closing of historical places
 - Norton bought by St. Gobain
 - Washburn and Moen's spin off company closes
- Attempt to save city
 - Enclosed downtown shopping center
 - Renovation of historic places (Union Station, Mechanics Hall)

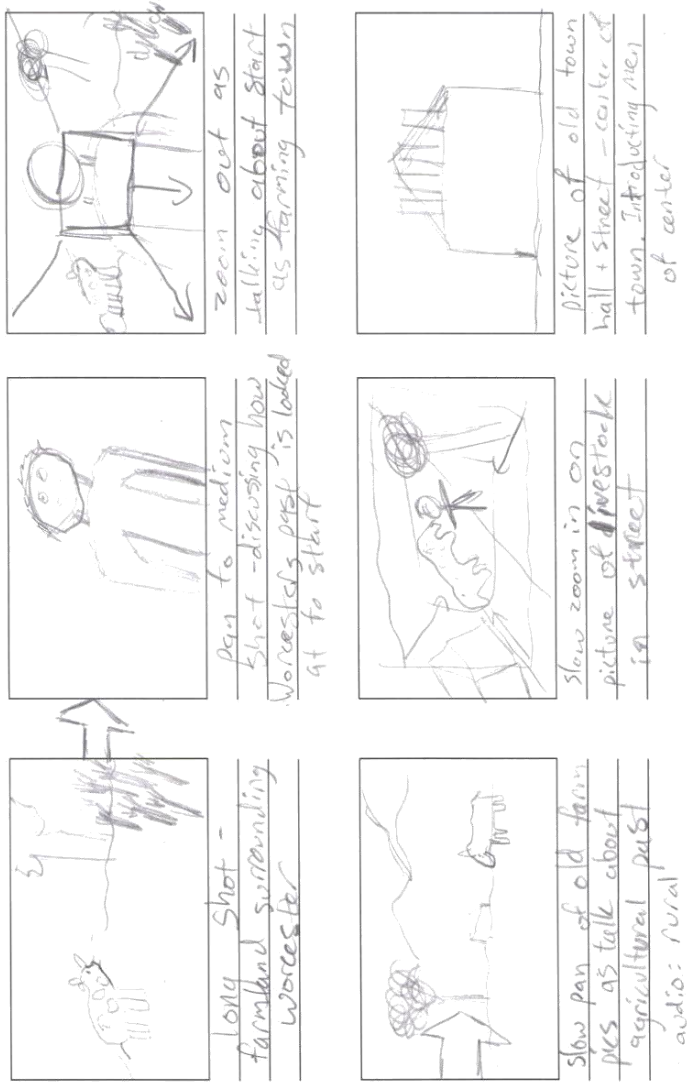
Worcester in its current state (~3-4 min)

- National attention
 - Why National Park is being built
- What the canal is today
- Change in focus in Worcester
 - Medicine
 - Education
- How old buildings are getting repurposed
 - Royal apartment complex
 - Gateway Labs
 - etc.
- Definition of National Park
 - What the common view of a National Park is
 - Major Landscapes
 - Sightseeing
 - What National Park is becoming
 - Historical values
 - Cultural values
 - Why the change in focus for National Parks is occurring
 - Worcester Canal District is a node upon the Blackstone Canal
 - <http://www.nps.gov/blac/index.htm>
 - Redefinition of National Park to include culture as well as the environment

Appendix D. - Storyboard

Storyboard template

Planning the filming of the promotional film



Storyboard template

Planning the filming of the promotional film



Men of Center -
Stephen Salisbury
slow zoom on portrait



Switch to slow zoom
on portrait of
Levi Lincoln



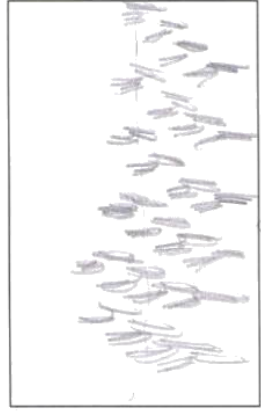
pan across current
Mill Brook, talking about
history



zoom out on cotton mill
when talking about in
relation to Brook



poster promoting Ware
County, Ag. Soc., talking
about it



picture of prosperous
farming, talking
about ag. changes

Storyboard template

Planning the filming of the promotional film



map of Worcester-Prudence
portion of canal taking
about Blackstone Canal Company
Audio: bustling/working



slow pan across Irish
workers discussing influence



slow pan across picture
of work on canal discussing
beginning/slow progress



Show buildings along
River talking about
construction of canal
was built



Zoom out on pic.
of Eric canal talking
about borrowing workers



zoom in on model of
Lady Carrington while
discussing completion
of canal

Storyboard template

Planning the filming of the promotional film



Medium shot, walking
across screen, talking
about population increase



Slow zoom in on
picture of old canal,
talking about channels



Medium still shot,
introduce canal's
problems



Still, medium shot
of pile of rocks in
river, discussing blockage



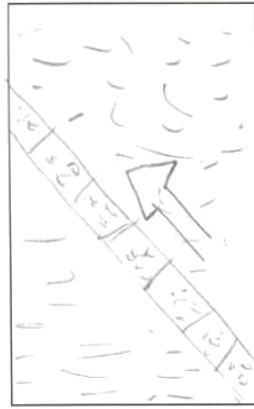
Shot of bad weather
conditions (torrential
rain, etc) in relation to
problems w/ canal
Audio: stormy



Train coming at camera
as transition to
railroads

Storyboard template

Planning the filming of the promotional film

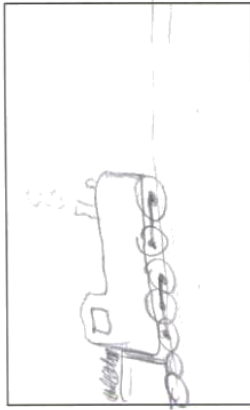


slow pan across train tracks, discuss introduction of railroads

audio: Trains/rails



slow zoom in on far shot of Union Station, discussing "crossroads of New England"



steady long shot on passing train, talking about Worcester/Providence line



medium shot of expert summarizing importance of canal/RR in Worcester History



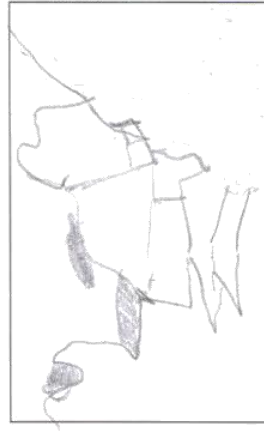
slow zoom in on picture of map of Worcester line, discussing lines opening



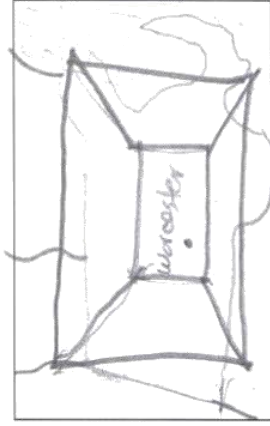
Longshot standing in front of canal district building, filming in next section

Storyboard template

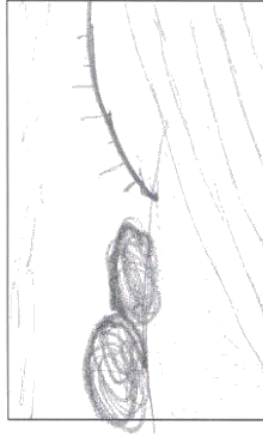
Planning the filming of the promotional film



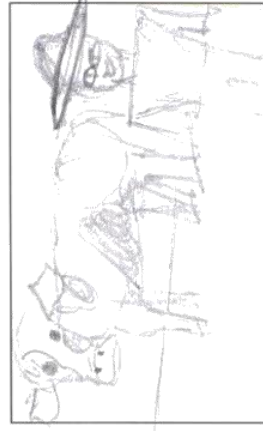
Long Distance Image: other
New England / East coast Map
Audio: other + Industrial / mechanical



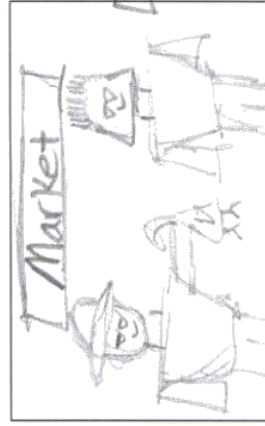
Zoom to Mass (state):
Continue zoom to
Warminster



Rural Farm land
Shot of warminster
Audio: Rural / Farm



Shot of Pre-Industrial
life style



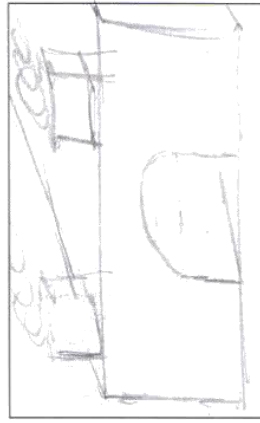
Daily Rural Interactions
- Bartering based
financial system



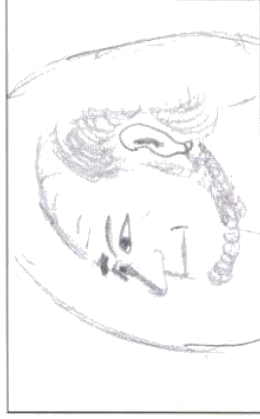
Cut to Interview:
Q/A leading Film
towards Industry
Medium shot

Storyboard template

Planning the filming of the promotional film



Medium shot of Factory:
Starting Industrial
transition.



Close shot: Image
of Ichabod Washburn

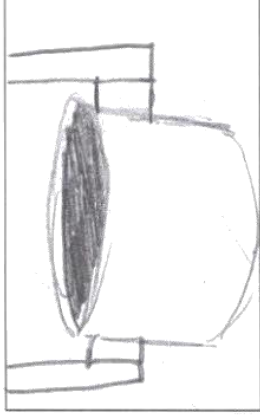
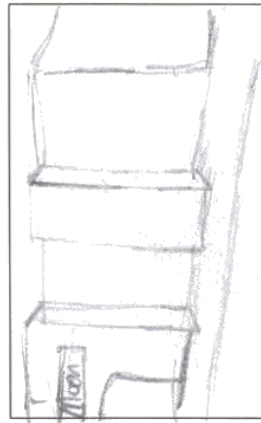
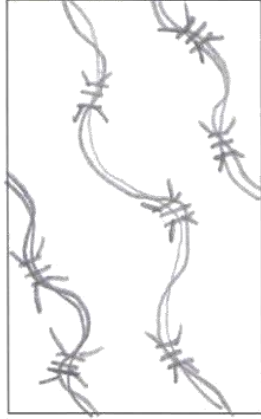


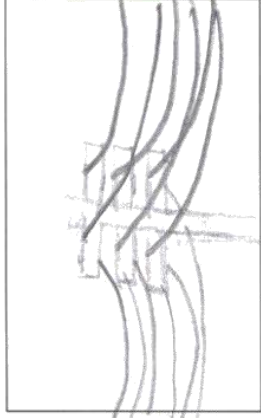
Image of Improved
Annealing potess



Long shot: Washburn and
Moon Company



Washburn's influence
on barbed wire



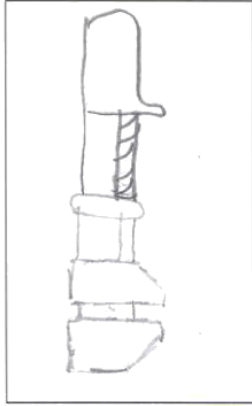
Washburn's influence
on telegraph wire

Storyboard template

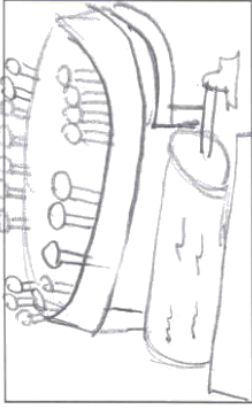
Planning the filming of the promotional film



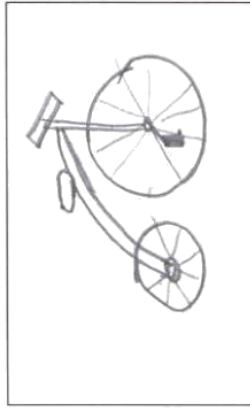
Compilation of Inventions
- Rickshaw



Monkey Wrench



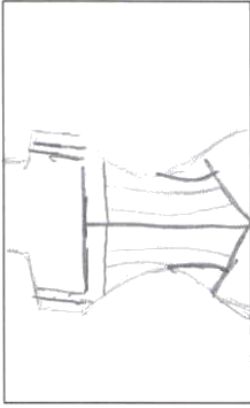
1st Practical Type Writer



Bicycle



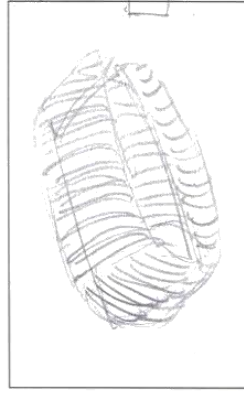
1st Liquid Fuel Rocket



Royal Corset Company

Storyboard template

Planning the filming of the promotional film



Compilation of Inventions
Cont'd,
Shredalheat



End of Compilation: Smooth Transition
populational diversity: Interview
Q/A Pointing film



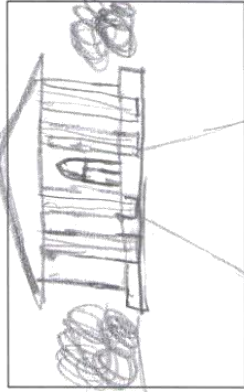
over view of warcester
County



Early population:
General area where
Major demographic's
lived



East side vs West side:
East side



West side

Storyboard template

Planning the filming of the promotional film



Triple Decker helped
more people live in city



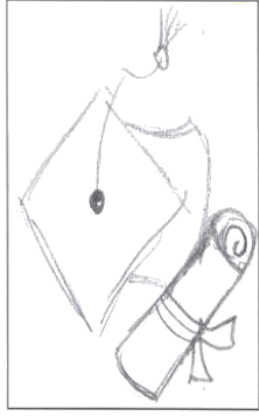
UMASS medical
school + hospital



Interview clip
Portray Film to modern
Worcester Achievements



Birth Control

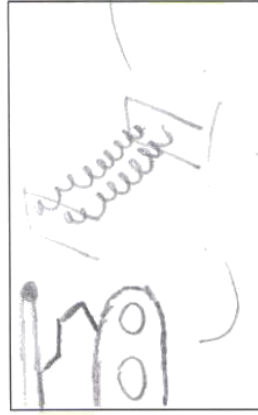


Focus on higher
education

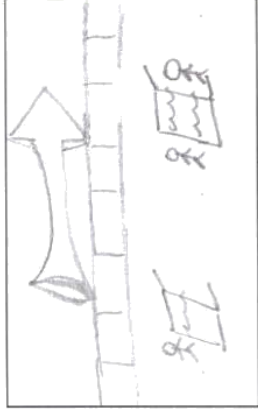


Storyboard template

Planning the filming of the promotional film



WWII Destruction Fade
in - talk on war
demands



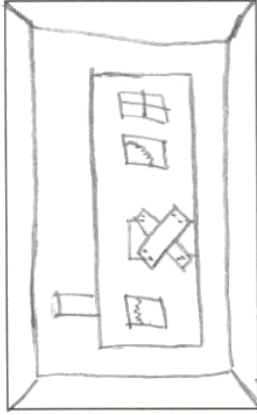
WWII Production
Pan



Warcester C. '40-'50
Fade in/out



Second shot c.'40-'50
Warcester MA - pan,
if shot allows



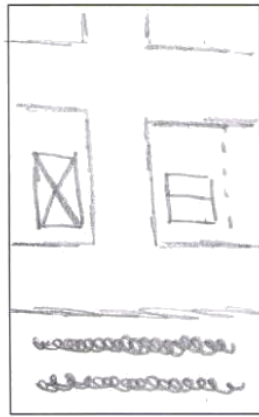
Closed Factory zoom
Heavy industry leaves
Warcester



Pan shot showing
evolution of autos ->
create suburbs

Storyboard template

Planning the filming of the promotional film



Shot of suburbs

- Pan if possible

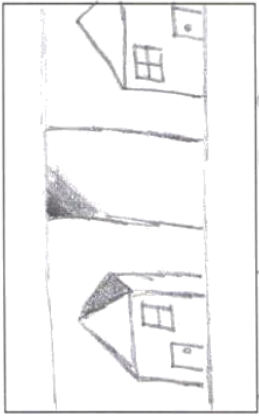
Talk on suburbs



Tornado of 1953

- Rubble, with zoom

(Possible to exclude)



Construction of 290

- Through community

shot - Fade in/out



290 - above city/map

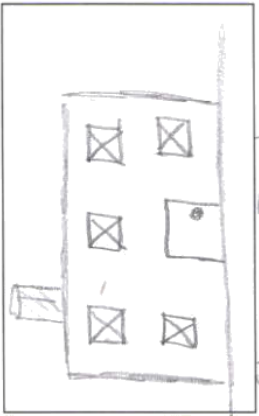
shot - Fade in



290 - MA shot

- connecting highways

"Heart of MA"



Closing of shops

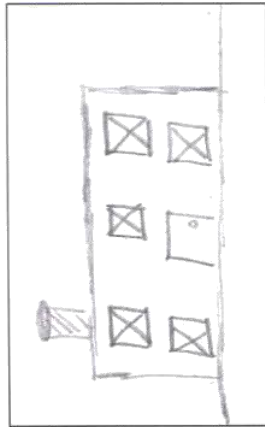
- tilt up / Fade out



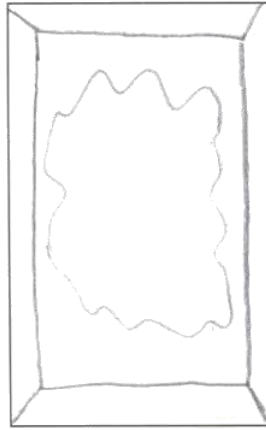
can we show St. Gobain's?

Storyboard template

Planning the filming of the promotional film



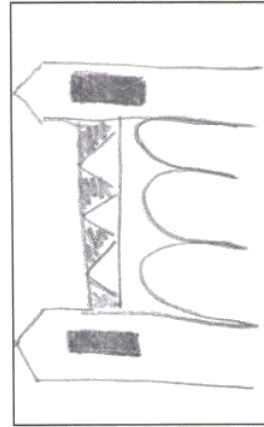
Closing of shops 2
W.B. → Muen
tilt up/fade in



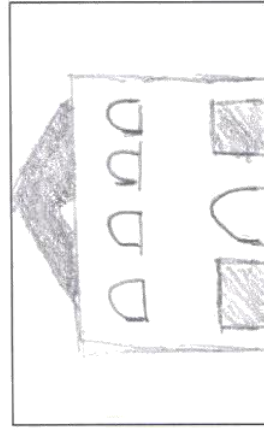
Map shot of Worcester
→ Zoom in
Talk on saving city



Attempt to save city
Downtown shopping
center



Historic Places
Union Station



Historic Places
Mechanics Hall



Interview?

Storyboard template

Planning the filming of the promotional film



landscape shot of
yellowstone geyser
narrative of national
park foundation



landscape shot of
yellowstone geyser
narrative on lack
of new landscapes



fade into shot of
geyser in yellowstone
park



medium shot of
interview with park
ranger on the change
in image of national
parks



landscape shot
of Yosemite park
narrative on landscape
parks



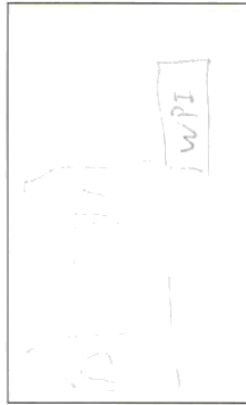
image of walking
map of Worcester
canal district

Storyboard template

Planning the filming of the promotional film



long shot of abandoned
buildings in Worcester
Narrative on lack
of culture.



long shot of schools
Narrative on change
in focus, a city



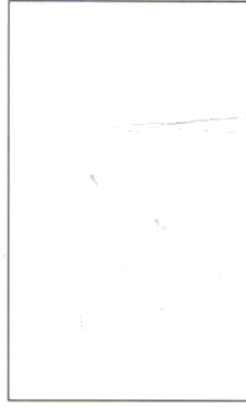
long shot of repurposed
building
Narrative on bringing
back history



long shot of UMass
medical continued
Narrative on change in
focus and repurposing



medium shot of
in review w/ Park
Ranger on what goal
of Park is



long shot of current
goal feeding into
old image Narrative
on our goals and
tie info back to final

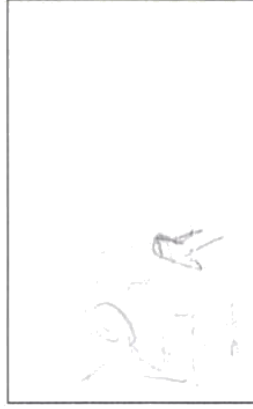
Storyboard template

Planning the filming of the promotional film

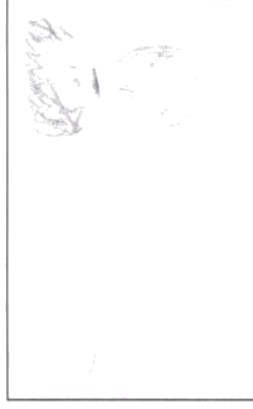
Intro



POV shot - walk up to person and ask question. cut to next shot



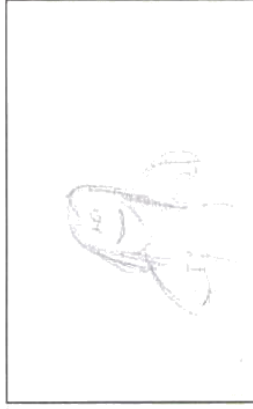
POV shot - shorter but similar - show asking the beginning of question - cut to next shot



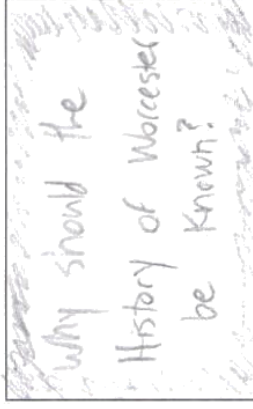
POV/medium shot of person answer. cut to next shot



POV/medium shot of person answer. cut to next shot



POV/medium shot of person answer. cut to text



text of question/objective of project fade into next shot

Storyboard template

Planning the filming of the promotional film

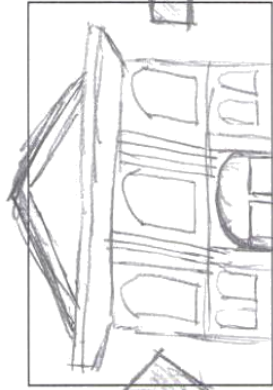
<p>Medium shot - Group introducing ourselves</p>	<p>Left → Right Pan (close-up shot): Goals of project</p>	<p>Cont'd: Left → Right Pan : Objective 1</p>
<p>Cont'd: Left → Right Pan : Objective 2</p>	<p>Cont'd: Left → Right Pan : Objective 3</p>	<p>Long shot of Canal District (possibly Water St)</p>

Storyboard template

Planning the filming of the promotional film



Beginning of Time lapse:
Union Station
Audio: NewAge



Time lapse cont'd:
Mechanics Hall



Time lapse cont'd:
Washington + Moore



Time lapse cont'd:
"Ard": More buildings
will be shown on the tape



Shot of group on
water street



Camera lowered
down man-hole to
see canal

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